



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/619,012	07/11/2003	Josef Dietl	P2001,0014	6029

24131 7590 08/13/2004

LERNER AND GREENBERG, PA
P O BOX 2480
HOLLYWOOD, FL 33022-2480

EXAMINER

WILSON, ALLAN R

ART UNIT PAPER NUMBER

2815

DATE MAILED: 08/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/619,012

Applicant(s)

DIETL ET AL.

Examiner

Allan R. Wilson

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-7 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>0703</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claims 1-7 are objected to because of the following informalities:

Claims 1-7, the terms “lateral edges” and “straight edge” are not defined. Not defined in the specification.

In claims 5 and 6, the metallic layer in claim 1 does not have to be a silicide layer.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 and 5-7 are rejected under 35 USC § 102(b) as being anticipated by Sugai U.S. Patent No. 5,030,930.

With regards to claims 1 and 7, Sugai illustrates in figures 1-10, particularly figures 1 and 2, (entire document) a semiconductor body having a top side;

a weakly-conductive doped well 5 formed in said semiconductor body;

a metallic layer 8, 12 on said well for forming a Schottky junction with lateral edges, said lateral edges being at least one of longer than a straight edge; said metallic layer being at least one layer of thin layers consisting of:

Art Unit: 2815

a liner of a contact hole filling extending in a dielectric layer 4 covering said top side; and
a contact region 13 being highly doped for a low-impedance contact connection and
having a lateral boundary in said doped well and a finger-shaped structure under 10.

With regards to claim 2, Sugai illustrates in fig. 1 said lateral edges 8 of said Schottky
junction and said lateral boundary of said highly doped contact region 10 facing said Schottky
junction have a constant distance therebetween.

With regards to claim 3, Sugai discloses in col. 3, lines 3-12, said doped well is a high-
voltage n-type well of a CMOS technology.

With regards to claims 5 and 6, Sugai illustrates in fig. 1 said [metallic layer] 8 has a
finger-shaped structure and is intermeshed in a come-shaped manner with a metal layer 11.

Allowable Subject Matter

Claim 4 is objected to as being dependent upon a rejected base claim, but would be
allowable if rewritten in independent form including all of the limitations of the base claim and
any intervening claims and the claim objection above is overcome.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's
disclosure: Kellner et al. (illustrates a Schottky diode with a curved structure), Sugai (U.S. Patent
No. 5,200,664, illustrates a Schottky diode with comb structure), Davies and Havemann et al.
(illustrate a Schottky diode with silicide),

Art Unit: 2815

Field of Search	Date
U.S. Class and subclass: 257/109, 485, 486	August 10, 2004
Other Documentation: None	N/A
Electronic data base(s): EAST (USPAT, US-PGPUB, JPO, EPO, Derwent, IBM TDB)	August 10, 2004

Any inquiry concerning this communication or earlier communications from an examiner should be directed to Primary Examiner Allan Wilson whose telephone number is (571) 272-1738. Examiner Wilson can normally be reached 7:00-4:00 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Allan R. Wilson
Primary Examiner
August 10, 2004